$_{ar{c}}$ (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 8 January 2004 (08.01.2004)

(10) International Publication Number WO 2004/003269 A1

(51) International Patent Classification7: D01F 6/74, C08J 5/18 // C08L 79:04

D01D 10/02,

(21) International Application Number:

PCT/EP2003/006578

(22) International Filing Date:

23 June 2003 (23.06.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 02014303.8

27 June 2002 (27.06.2002) EP

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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCESS FOR OBTAINING A SYNTHETIC ORGANIC AROMATIC HETEROCYCLIC ROD FIBER OR FILM WITH HIGH TENSILE STRENGTH AND/OR MODULUS

(57) Abstract: The invention pertains to a process for obtaining a synthetic organic aromatic heterocyclic rod fiber or film with high tensile strength and/or modulus comprising spinning a synthetic organic polymer to a aromatic heterocyclic rod fiber or obtaining the synthetic organic polymer as an aromatic heterocyclic rod film, followed by loading the fiber or film in the presence of a processing aid, at a temperature below the boiling point of the processing aid and above -50°- C, at a tension of 10 to 95 % of the fiber or film breaking strength, followed by removing the processing aid and/or performing a heating step at a tension of 10 to 95% of the fiber or film breaking strength.



In PCT/EP 03/06578

CLASSIFICA C 7 D	O1010/02 D01F6/74 C08J5/18 //C08L79:04		
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lectronic data	base consulted during the international search (name of data base and		
PO-Inte	ernal, PAJ, WPI Data		
C. DOCUMEN	NTS CONSIDERED TO BE RELEVANT	Relevant to claim No.	
Category °	Citation of document, with indication, where appropriate, of the relevan	n passages	
A	WO 94 25506 A (AKZO NOBEL NV ;SIKKE DOETZE JAKOB (NL); LISHINSKY VADIM LEONIDOV) 10 November 1994 (1994-11) the whole document & EP 0 696 297 A 14 February 1996 (1996-02-14)	1-11	
	cited in the application		1-7
A	EP 0 384 425 A (E.I. DU PONT DE NE AND COMPANY) 29 August 1990 (1990- the whole document	,	
A	PATENT ABSTRACTS OF JAPAN vol. 009, no. 228 (C-303), 13 September 1985 (1985-09-13) & JP 60 088117 A (ASAHI KASEI KOG' 17 May 1985 (1985-05-17) abstract	1-7	
	1,41,40	X Patent family members are list	ed in annex.
° Special 'A' docu con 'E' earlie filin 'L' docu whi	categories of cited documents: Iment defining the general state of the art which is not insidered to be of particular relevance are document but published on or after the International go date Iment which may throw doubts on priority claim(s) or lich is cited to establish the publication date of another action or other special reason (as specified) Current referring to an oral disclosure, use, exhibition or ther means	"T" later document published after the it or priority date and not in conflict we cited to understand the principle or invention "X" document of particular relevance; the cannot be considered novel or car involve an inventive slep when the cannot be considered to involve a document of particular relevance; the cannot be considered to involve a document is combined with one of ments, such combination being of in the art. "8" document member of the same pa	nternational filing date fith the application but theory underlying the ne claimed invention not be considered to document is taken alone ne claimed invention in inventive step when the r more other such docu- bylous to a person skilled
"P" doc	cument published prior to the international filling date but ter than the priority date claimed	Date of mailing of the international	I search report
Date of	the actual completion of the international search	02/10/2003	
ļ	19 September 2003	Authorized officer	
Name a	and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Tarrida Torrel	1, J.

INTER ONAL SEARCH REPORT

nal Application No PCT/EP 03/06578

	information on patent family members		ÇIO	PC1/EP 03/003/0	
Patent document		Publication	F	Patent family member(s)	Publication date
cited in search report W0 9425506	A	10-11-1994	AT CA CN DE DE DK WO EP ES JP US	169317 T 2161663 A1 1121728 A ,B 69412250 D1 69412250 T2 696297 T3 9425506 A1 0696297 A1 2120042 T3 8509516 T 5674969 A	15-08-1998 10-11-1994 01-05-1996 10-09-1998 11-02-1999 10-05-1999 10-11-1994 14-02-1996 16-10-1998 08-10-1996 07-10-1997 19-01-1995
EP 0696297	A	 14-02-1996	ZA DE DK EP JP US AT CA CN WO	9402967 A 69412250 D1 69412250 T2 696297 T3 0696297 A1 8509516 T 5674969 A 169317 T 2161663 A1 1121728 A ,B 9425506 A1 2120042 T3	19-01-19-3 10-09-1998 11-02-1999 10-05-1999 14-02-1996 08-10-1996 07-10-1997 15-08-1998 10-11-1994 01-05-1996 10-11-1994 16-10-1998
EP 0384425	Α	 29-08-1990	US BR CA CN DE DE EP	9402967 A 4985193 A 9000765 A 2009526 A1 1045283 A 69024074 D1 69024074 T2 0384425 A2	19-01-1995 15-01-1991 22-01-1991 21-08-1990 12-09-1990 25-01-1996 04-07-1996 29-08-1990
 JP 6008811	7 A	17-05-198	JP JP KR	2242914 A 2893638 B2 9710718 B1	27-09-1990 24-05-1999 30-06-1997